

## DEFINITIONS AND SPECIAL INSTRUCTIONS

**1. Scope of survey**

This survey covers all manufacturers of switchgear, switchboard apparatus, relays, and industrial controls.

**2. Figures to be reported**

Companies with more than one establishment manufacturing the products covered by this survey are requested to complete a separate report form for each location. If you have not received a separate form for each of your establishments, please call the contact shown on the report form or write to the U.S. Census Bureau for additional forms.

**a. Quantity and value of shipments**

The figures on quantity and value of shipments should include the physical shipments of all products sold, transferred to other establishments within your company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to your own branches should be assigned the same value as comparable sales to unaffiliated customers, i.e., the value includes an appropriate allocation of company overhead and profit. Products bought and resold without further manufacturing should not be included in shipments.

**b. Units of measure**

*Quantity* — Report in number of units

*Value* — Report in thousands of dollars

**c. Columnar structure of report**

When posting your figures to the original report, please be sure to report information in the correct columns. These are:

*Column 1* — Quantity of shipments

*Column 2* — Value of shipments

Report value figures in thousands of dollars. Each product should be reported separately. Do not combine product lines.

**3. Definitions**

Many of the products are listed separately, either as control components or as control assemblies. Report separate data for such products, but do not report separate control components which are sold as an integral part of a control assembly.

*Relay* — A device that is operative by a variation in the conditions of one circuit to effect the operation of other devices in the same or another electric circuit.

*Control relay* — A relay which functions to initiate or to permit the next desired operation in a control circuit or scheme.

*Overload relay* — A relay which functions at a predetermined value of current (overcurrent relay).

*Busway* — A prefabricated electric distribution system consisting of bus bars in a protective enclosure together with associated fittings. All busways include as a minimum: bus bars, some supporting means for these bars, and a housing around them.

*Industrial control relays (all voltages)* — a.c. and d.c. operated electromagnetic relays designed primarily to perform logic functions and/or operate in inductive control circuits of industrial equipment. Includes relays with mounted pneumatic or solid-state timer attachments. Excludes timer attachments sold separately, reed devices, relays with only resistive load ratings or relays designed for use with metal mill or crane control, and relays incorporated in products covered by other categories. Also excludes solid-state relays and relays designed for military applications, or the appliance or telephone industry.

*Electronic relays (all voltages)* — a.c. and d.c. operated electromagnetic relays rated for resistive loads and used to perform logic functions in industrial electronic applications. Includes plug-in, ice cube, printed circuit card mounted and base mounted relays with mounted timer attachments. Excludes timer attachments sold separately, relays designed for use with metal mill or crane control and relays incorporated in products covered by other categories. Also excludes solid-state relays designed for military applications.

*Solid-state relays (all voltages)* — Solid-state relays sold as individual items. Typically these are single circuit devices that use a logic level signal to control a 120 volt circuit. Excludes overcurrent relays and output devices of logic systems sold separately, mill and crane accessories, and similar items incorporated in a product covered by any other category.

*Solid state industrial control timers (all voltages)* — Interval and time-delay relays that have their timing period controlled by a circuit using semiconductors, regardless of output means. Excludes relays with solid-state timer attachments and timers designed as solid state logic units or for metal mill or crane applications or incorporated in products covered by other categories.

*Nonsolid-state industrial control timers (all voltages)* — Mechanically or electrically operated a.c. or d.c. timers designed primarily to operate in logic and control circuits of industrial applications. Includes mechanically programmed timers, timing attachments used with contactors or relays, motor driven, and pneumatic timing relays, time delay relays (nonelectronic), interval timers and under voltage time delay relays. Excludes solid-state timers, relays with timer attachments mounted and timers designed as solid-state logic units or for metal mill or crane applications or incorporated in products covered by other categories.

**3. Definitions — Continued****SPECIFIC APPLICATION OR SPECIFIC INDUSTRY CONTROLS**

*U.S. Coast Guard, Navy, and Marine auxiliary controls and accessories (all voltages)* — Controllers and accessories designed to meet the requirements of the U.S. Navy, U.S. Coast Guard, and similar specifications for marine auxiliary control. Includes all a.c. and d.c. versions of such power circuit or control circuit devices for application above or below deck except adjustable speed drive controls and solid-state digital logic systems for marine applications.

*Metal mill controls and accessories (all voltages)* — Any a.c. or d.c. power or control circuit device designed for and sold separately for metal mill applications. Includes master switches, limit switches (power or control circuits), timers, relays, etc.

*Crane and hoist controls (all voltages)* — a.c. or d.c. control assemblies designed to control hoist, trolley, and/or bridge motion for application in mines, traffic carrying bridges, elevators, and general industry. Includes crane protective panels, hoist or crane master switches, and adjustable speed drives for these purposes, except those for marine applications. Excludes crane and hoist controls for marine applications, pendant control stations, and other accessories sold separately.

*Definite purpose contactors and starters (600 volts or less)* — Definite purpose full voltage contactors and starters, including open and enclosed devices. Including, but not limited to, heating loads, lighting loads, refrigeration, solid-state starters and contactors, etc.

*Computer numerical controls* — A computer-based motion control device programmable in numerical word address format such as EIA RS-274D, RS-494, or equivalent international standard. A computer numerical control (CNC) product typically includes a CPU module, associated panel and processor rack equipment, operator interface devices, input/output signal and data devices, software and related peripheral apparatus.

*Robotic controls* — A computer-based motion control device primarily designed to control the motion of a robot. A robot is defined as a "reprogrammable multifunctional manipulator designed to move material, parts, tools, or specialized devices through variable program motions for the performance of a variety of tasks."

*Other stand alone motion controls* — Self-contained, processor-based motion/positioning control devices for single axis and multiaxis applications, programmable in various languages, for control of servo or stepper drives and motors.

*Subordinate motion controls* — Processor-based devices which internally execute motion programs, yet rely on connection to an external bus or rack for power, communications, and supervisory control.

*Programmable control motion module* — A subordinate motion control device which is intended for use in or with a programmable controller.

*Bus motion module* — A subordinate motion control device which is intended for use with general purpose computers such as personal computers, VME, STD, Multibus.

*Chip-level device* — Integrated circuit-based motion control devices intended for incorporation in circuit board designs.

*Other specific purpose equipment (all voltages)* — Any industrial control equipment designed for a specific application which is not covered by any other category such as aircraft contactors and controllers rated 601V up to 2,200V, dynamic braking controls sold separately, dimmers, and automatic transfer switches.

*A.c. or d.c. control panels (all voltages)* — Assemblies of components in which the principal power circuits are a.c. or d.c., for applications other than welding, marine auxiliaries, crane, hoist, or adjustable speed drives. Also excluded are panels which have been the outputs controlled by solid-state digital logic. Specifically included are analog controllers, furnace and lifting magnet controls, regulators, and motor controls which provide for plugging and/or dynamic braking.

**General purpose controls**

*A.c. full voltage, noncombination magnetic starters (1,000 volts or less)* — Electromagnetic switches with overload protection rated in amperes, horsepower, or kilowatts for application at full voltage with nonsynchronous motors. Includes open and enclosed; single and multispeed; reversing and nonreversing; electrically, mechanically, or magnetically held; a.c. or d.c. operated; and controls for one or more squirrel cage or wound rotor motors. Excludes those starters which qualify for any "Specific application" item.

*A.c. full voltage combination magnetic starters (1,000 volts or less)* — Electromagnetic switches with or without overload protection combined with a disconnect device, rated in amperes, horsepower, or kilowatts for application at full voltage with nonsynchronous motors. Includes open and enclosed; single and multispeed; reversing and nonreversing; electrically, mechanically or magnetically held; a.c. or d.c. operated; and controls for one or more squirrel cage or wound rotor motor. Variations include those with fusible or nonfusible disconnect switch or circuit breaker; and those for oil well, irrigation, or other pumping application. Excludes those starters which qualify for any "Specific application" item.

**General purpose controls — Continued**

*Disconnect switches (600 volts or less)* — A 600 volt rated switch intended primarily to be used with electric motor controls, and where available, fault currents greater than 10 KA RMS symmetrical are likely to be encountered. The device may be HP and ampere rated, and may meet the requirements for service entrance disconnecting means. "Safety Switches" are not included in this category.

*A.c. full voltage manual controllers (1,000 volts or less)* — Manual switches with or without overload protection, with or without disconnect devices, rated in amperes, horsepower, or kilowatts for application at full voltage with nonsynchronous motors. Includes open and enclosed, single and multispeed, reversing and nonreversing; and controls for one or more squirrel cage or wound rotor motors. Variations include toggle switches, drum switches, and loom switches. Excludes those devices which qualify for any "Specific application" item.

*A.c. magnetic contactors (1,000 volts or less)* — Electromagnetic switches without overload protection, and without disconnect devices rated in amperes, horsepower, or kilowatts. Includes open or enclosed; single and multispeed; reversing and nonreversing; electrically, mechanically, or magnetically held; a.c. or d.c. operated, for lighting, heating, motor, power distribution, or high frequency applications.

*A.c. reduced voltage magnetic or manual controllers (1,000 volts or less)* — Magnetic switches with or without overload protection, with or without disconnect devices, rated in amperes, horsepower, or kilowatts, which start nonsynchronous motors at reduced voltage. Includes open and enclosed, single and multispeed, reversing and nonreversing types. Variations include controllers with a primary or secondary resistor, reactor, auto-transformer, partwinding, and stardelta starters. Excludes those devices which qualify for any "Specific application" item.

*Synchronous motor controllers (1,000 volts or less)* — Armature and field controls for synchronous motors, starting at full or reduced voltage. Excludes those devices which qualify for any "Specific application" item.

*Motor control centers (1,000 volts or less)* — Factory-built and customer-assembled control centers, including the sections and units sold separately.

*Medium voltage nonsynchronous and synchronous motor motor controllers (over 1,000 through 7,200 volts)* — Manual and magnetic devices for the control of squirrel cage, wound rotor, and synchronous motors. Includes open and enclosed; combination and noncombination starters and contactors; full or reduced voltage; and reversing and nonreversing air break, vacuum break, and oil immersed. Excludes those devices which qualify for any "Specific application" item.

*A.c. or d.c. friction brakes and clutches (all voltages)* — All devices used to engage or control motion by slowing or stopping, provided the clutch or brake is operated or released electrically. Braking or clutch action may be controlled mechanically, hydraulically, or magnetically, using shoes or discs. Excludes dynamic braking controls.

*Electromechanical positioning sensors (all voltages)* — a.c. or d.c. switches and sensors which respond to movement or position. Includes mechanical and air operated limited switches, and rotating CAM switches. Excludes those devices used in or covered by "solid state digital control systems" or are classified as "precision (1/8" gap or less) snap-acting switches."

*Movement sensors (all voltages)* — A device that detects if an object is moving in relation to the sensors. Such devices would include speed switches, encoders, resolvers, tachometers, etc.

*Non-optical proximity sensors* — An a.c. or d.c. device that detects a specified change in the energy field within the sensing zone of the switch, and causes the output to change its state. The energy field may be magnetic, electromagnetic, acoustical or dielectric.

*Optical proximity sensors (all voltages) (photoelectrics)* — A device that detects a specified change in light sensitivity (i.e., absence, presence, intensity) within the sensing zone of the switch, and causes output to change its state.

*D.c. power circuit devices (all voltages)* — Manual and magnetic devices sold separately for the control of d.c. power. Includes open and enclosed, combination and noncombination, full or reduced voltage, reversing or nonreversing, air brake and oil immersed. Excludes those devices which qualify for any "Specific application" item.

*Industrial control pushbuttons, selector switches, pilot lights, and foot switches (all voltages)* — a.c. or d.c. manually operated devices designed primarily to operate in the control circuits of industrial applications. Includes control stations, reed devices, and rotary switches with control circuit ratings. Excludes metal mill and crane accessories and similar items incorporated in products covered by other categories such as conversion kits to starters, and those designed for aircraft, appliances, business machines, computers, or elevator applications.

*Resistors and rheostats* — Separate components and assemblies of carbon and metal resistors designed to function in a power or motor field circuit. Includes manual and motor operated rheostats, cast and wound metal resistors, and carbon pile resistors. Excludes resistors designed for use in electronics circuits.

**General purposes controls — Continued**

*A.c. and d.c. adjustable speed drive controls (all voltages)* — The control portion of adjustable (regulated) speed drives, controlling motors by adjusting voltage or adjusting frequency. Includes single and multimotor drive controls, eddy current coupling drives, all elements of the power units (except motor generators), and all auxiliary controls sold as part of the drive system. Excludes all rotating equipment.

*Packaged a.c. adjustable speed drive* — All equipment required to adjust the speed or torque of an a.c. electric motor(s) by controlling both frequency and voltage applied to the motor(s). Includes rotating equipment.

*Packaged d.c. adjustable speed drive* — All equipment required to adjust the speed or torque of a d.c. electric motor(s) by controlling the voltage applied to the armature and/or field of the motor(s). Excludes rotating equipment.

*A.c. and d.c. drive systems* — An engineered system built to meet customer specifications, incorporating one or more power conversion modules; may control several motors in a coordinated manner. Includes a.c. and d.c. types. Excludes rotating equipment.

*Solid state contactors* — All primarily solid state devices designed to be used in the power circuit for control of ovens, furnaces, lighting or other power consuming devices. This group also includes power switching devices used for turning motors on and off only. This does not include resistance welding controls, adjustable speed drive controls, and any other product which qualifies for inclusion in other "Specific application" or "General industry control" categories.

*Solid state motor controllers* — All primarily solid state devices designed to control both the starting acceleration and stopping deceleration and starting and stopping time of single phase and polyphase a.c. induction motors under 1,000 V. Excluded are solid state overload relays and solid state devices that do not alter the starting or stopping characteristics of the motor.

This group also includes solid state braking devices. This does not include resistance welding controls, adjustable speed drive controls, and any other product which qualifies for inclusion in other "Specific application" or "General industry control" categories.

*All other general industry devices and systems* — Solid-state digital panels using either wired or retentive memory logic to provide data or control processes or machine functions systems, n.e.c.

*Motor controller accessories* — Those items which are sold separately but become part of a motor controller. Includes overload relays, auxiliary contacts, heater elements, mechanical interlocks, control transformers, kits to add pushbuttons, selector switches, pilot lights, separate controller enclosures and enclosure fittings, reset mechanisms, etc. Excludes motor circuit switches sold separately.

**4. Comparability**

Data reported in this survey should correspond to data reported in the Economic Census - Manufacturing Sector form. The sum of values for item codes shown in column (a) should correspond to the dollar values reported under product codes indicated in column (b) below:

Current Industrial Reports (Form) MA335A	Economic Census - Manufacturing Sector
Item codes (a)	Product codes (b)
2021 through 2053	3353131 100
3001 through 3201	3353133 100
4001 through 4301	3353135 100
5102 through 5116	3353137 100
5299	3353139 100
5314 through 5361	335313A 100
5400 through 5496	3353141 100
6101 through 6355	3353143 100
6402 through 6509	3353145 100
6703 through 6705	3353147 100

# REFERENCE LIST

FORM MA335A SWITCHGEAR, SWITCHBOARD APPARATUS, RELAYS, AND INDUSTRIAL CONTROLS (SHIPMENTS)		
Product code	Item code	Item description
3353131101	<b>2021</b>	Power circuit breakers, all voltages
3353131103	<b>2023</b>	Power circuit breakers (sold separately) for use in metal-clad switchgear (oil and oil-less), over 1,000 volts ( <i>Report number of breakers</i> )
3353131129	<b>2053</b>	All other power circuit breakers, sold separately
XXX	<b>2099</b>	Parts for all other power circuit breakers ( <i>Report value only</i> )
		<b>Total power circuit breakers and parts (Sum of item codes 2021–2053) (Report value only)</b>
3353133201	<b>3001</b>	<b>Low voltage panelboards, distribution boards, and other switching and interrupting devices, 1,000 volts and below (Report quantity in number of units)</b>
3353133104	<b>3005</b>	Panelboards (include enclosing cabinets)
3353133207	<b>3011</b>	Fusible (include combination switch fuse)
3353133211	<b>3015</b>	Circuit breaker
3353133213	<b>3019</b>	Distribution switchboards
		Fusible
		Circuit breaker
		Other ( <i>include theater switchboards</i> )
		Switches (except switches commonly known as snap, toggle, and rotary switches; and switch devices intended primarily to be used with electric motor controls)
3353133216	<b>3104</b>	Knife switches, enclosed:
3353133219	<b>3105</b>	Heavy duty
3353133222	<b>3111</b>	General duty
3353133225	<b>3115</b>	Enclosed fusible, service entrance, and branch circuit cutouts
		Circuit breaker type
		Load centers:
3353133228	<b>3132</b>	Grouped metering panels (combinations of two or more meters and related switching units with overcurrent protection associated with each meter, including accessory components; excluding single socket load combinations)
3353133231	<b>3133</b>	Other switches ( <i>Excluding snap, bolted, toggle, push, etc.; including open knife switches, motor contact, motor disconnect, meter service equipment other than meter mounting, and test devices</i> ) — <i>Specify kind (Report value only)</i>
3353133234	<b>3201</b>	Other low voltage switchgear apparatus — <i>Specify kind (Report value only)</i>
XXX	<b>3999</b>	<b>Total low voltage panelboards, and distribution boards and other switching and interrupting devices, 1,000 volts and below (Sum of item codes 3001–3201) (Report value only)</b>
3353135101	<b>4001</b>	<b>Fuses and fuse equipment under 2,300 volts (except power distribution cutouts) (Report value only)</b>
3353135104	<b>4101</b>	Nonrenewable plug fuses
		Nonrenewable cartridge fuses

**REFERENCE LIST — Continued**

<b>FORM MA335A</b>		
<b>Product code</b>	<b>Item code</b>	<b>Item description</b>
3353135107 3353135111  XXX	<b>4201</b> <b>4301</b>  <b>4999</b>	<b>Fuses and fuse equipment under 2,300 volts (except power distribution cutouts) — cont. (Report value only)</b>  Renewable plug and cartridge fuses <i>(Including renewal links)</i> Other fuses and open fuse material <i>(Including cutouts, clips, bases, etc.)</i>  <b>Total fuses and fuse equipment under 2,300 volts (except power distribution cutouts) (Sum of item codes 4001–4301)</b>
3353137101 3353137104  3353137107 3353137111 3353137113  3353137117 3353137131 XXX	<b>5102</b> <b>5104</b>  <b>5106</b> <b>5108</b>  <b>5109</b>  <b>5110</b> <b>5116</b> <b>5199</b>	<b>Molded case circuit breakers, 1,000 volts and under (Report quantity in number of units)</b>  Industrial type — assembled as complete units in supporting and enclosing housing of insulating materials; with or without accessories or attachments  With ground fault detection capability Without ground fault detection capability  Residential or light duty type — (primarily) for load center application — assembled as complete units in supporting and enclosing housing of insulating materials  With ground fault detection capability Without ground fault detection capability  Individually enclosed industrial type <i>(excluding panelboards and busway plugs)</i>  Other molded case circuit breakers:  Marine, Navy, aircraft and aerospace type  All other types, including automotive and electronic  <b>Total molded case circuit breakers, 1,000 volts and under (Sum of item codes 5102–5116)</b>
3353139100	<b>5299</b>	<b>Duct, including plug-in units and accessories (not exceeding 1,000 volts), consisting of enclosed sectionalized prefabricated bus bars rated 20 amperes or more and associated structures and fittings (Report quantity in number of units)</b>
335313A101 335313A204	<b>5314</b> <b>5319</b>	<b>Switchgear, except ducts (Report value only)</b>  Automatic and manual control panels (generators, transformers, feed-controls, etc.)  Metal-clad switchgear (using power circuit breakers, oil and oil-less ), all voltages above 1,000 volts up to and including 38kV, excluding load interrupter switchgear

**REFERENCE LIST — Continued**

FORM <b>MA335A</b>		
Product code	Item code	Item description
		<b>Switchgear, except ducts — continued</b> <b>(Report value only)</b>
335313A307	<b>5323</b>	Metal-enclosed load interrupter switchgear assemblies, all voltages, including parts
335313A311	<b>5327</b>	Metal-enclosed low-voltage power circuit breaker switchgear assemblies 1,000 volts and below, including parts and excluding load interrupter switchgear
335313A313	<b>5331</b>	Metal-enclosed bus when sold separately, above 1,000 volts, including isolated, segregated, nonsegregated, and cable bus  Power switching equipment (include attachments, auxiliaries, bus supports and fittings, accessories, but exclude power fuses sold separately) 2,300 volts and over. (Also includes single phase circuit reclosers.)
335313A316	<b>5335</b>	Outdoor, excluding structures
335313A319	<b>5337</b>	Indoor
335313A322	<b>5339</b>	Power fuses and fuse links for 2,300 volts and over, AC service <i>(exclude distribution cutouts)</i>
335313A325	<b>5341</b>	Power and ground connectors generally used in substation construction
335313A328	<b>5345</b>	Overhead transmission and distribution connectors (clamps, taps, terminals, and splices)
335313A331	<b>5351</b>	Transmission and distribution connectors, not elsewhere classified <i>(include underground deadends, hotline taps, stirrups, repair sleeves, etc.)</i>
335313A334	<b>5355</b>	Distribution cutouts
335313A337	<b>5361</b>	Other switchgear devices, including regulators and miscellaneous switchgear devices (for sale separately)
XXX	<b>5398</b>	<b>Total switchgear (Sum of item codes 5314–5361)</b>
		<b>Relays (Report quantity in number of units)</b>
3353141101	<b>5400</b>	Industrial control relays (all voltages), not elsewhere classified
3353141104	<b>5401</b>	General purpose electromechanical relays: Over 100 MW actuating power and sealed (either hermetically or environmentally): 0 through 2.0 amps contact rating
3353141107	<b>5402</b>	Over 2.0 through 10.0 amps contact rating
3353141111	<b>5403</b>	Over 10.0 amps contact rating

**REFERENCE LIST — Continued**

FORM <b>MA335A</b>		
Product code	Item code	Item description
		<b>Relays — continued</b>
		<b>(Report quantity in number of units)</b>
3353141113	<b>5409</b>	Over 100 MW actuating power and not sealed:
3353141116	<b>5418</b>	0 through 10.0 amps contact rating
3353141119	<b>5419</b>	Over 10.0 contact rating
		0 through 100 MW actuating power (both sealed and not sealed)
		Miniature printed circuit mounted electromechanical relays ( <i>excluding reed relays</i> ) (profile height 1/2" maximum):
3353141122	<b>5422</b>	Sealed (either hermetically or environmentally):
3353141125	<b>5423</b>	0 through 2.0 amps contact rating
3353141128	<b>5424</b>	Over 2.0 amps contact rating
		Not sealed
3353141131	<b>5425</b>	DIP or SIP footprint:
		Sealed (either hermetically or environmentally)
3353141134	<b>5426</b>	Telephone relays, all types:
3353141137	<b>5427</b>	Sealed (either hermetically or environmentally)
		Not sealed
3353141141	<b>5428</b>	General purpose solid-state relays, pure solid-state and hybrid solid-state ( <i>excluding time delay</i> )
		High performance military/aerospace/aircraft relays and contactors (generally pertaining to Mil-R5757, 6106, 19523, 25108 and 39016)
3353141143	<b>5440</b>	Round and square can multipole airframe relays and contactors (both sealed and not sealed) (all sizes):
		Crystal can types (sealed):
3353141146	<b>5441</b>	Larger than full size
3353141149	<b>5442</b>	Full size
3353141152	<b>5445</b>	Half size and smaller (including TO-5 package)
3353141155	<b>5450</b>	RF, antenna and coaxial relays (sealed and not sealed) ( <i>excluding reed relays</i> )
		Reed relays:
		Dry reed:
3353141158	<b>5460</b>	Miniature size (glass length less than .85 inches)
3353141161	<b>5461</b>	Standard size
3353141164	<b>5466</b>	Mercury wetted reed
3353141167	<b>5470</b>	Stepping switches, stepping and impulse relays
3353141171	<b>5475</b>	Switchgear and protective relays
		Timing relays (timers):
3353141173	<b>5480</b>	Solid-state/EMR combination
3353141176	<b>5481</b>	Solid-state pure
3353141179	<b>5482</b>	All other timing relays (timers) including pneumatic, motor driven, electronic, etc.



**REFERENCE LIST — Continued**

FORM <b>MA335A</b>		
Product code	Item code	Item description
		<b>Relays — Continued</b>
		<b>(Report quantity in number of units, except items 5492, 5496 and 5499)</b>
3353141182	<b>5492</b>	All other general purpose and special purpose relays, not elsewhere classified <i>(Report value only)</i>
3353141185	<b>5496</b>	Parts for general purpose and special purpose relays, (sold separately) <i>(Report value only)</i>
XXX	<b>5499</b>	<b>Total general purpose and other relays (Sum of item codes 5400–5496) (Report value only)</b>
		<b>Specific purpose industrial controls (Report quantity in number of units)</b>
3353143301	<b>6101</b>	U.S. Coast Guard, and Marine auxiliary controls and accessories
3353143104	<b>6201</b>	Metal mill control and accessories (all voltages)
3353143307	<b>6211</b>	Crane and hoist controls, constant and adjustable voltage (including operators' desks and stations)
3353143311	<b>6215</b>	Definite purpose contactors and starters (600 volts and less)
		Motion controllers:
		Stand-alone motion controls:
3353143313	<b>6311</b>	Computer numerical controls (CNC); positioning (point-to-point)
3353143316	<b>6321</b>	Computer numerical controls (CNC); continuous path (contouring)
3353143319	<b>6323</b>	Robotic controls
3353143322	<b>6324</b>	Other stand-alone motion controls
3353143325	<b>6326</b>	Subordinate motion controls
3353143228	<b>6343</b>	Programmable controllers (sold separately)
3353143331	<b>6355</b>	Other specific or special purpose a.c. and d.c. controllers, other definite purpose devices <i>(Specify kind) (Check product reference list thoroughly before reporting in this classification) (Report value only)</i>
XXX	<b>6399</b>	<b>Total specific purpose industrial controls and power circuits devices (Sum of item codes 6101–6355) (Report value only)</b>
		<b>General purpose controls (Report quantity in number of units, except item code 6431)</b>
3353145101	<b>6402</b>	A.c. full voltage non-combination magnetic starter (1,000 volts or less)
3353145104	<b>6404</b>	A.c. full voltage combination magnetic starters (1,000 volts or less):
3353145107	<b>6408</b>	Combination starters (less pumping panels)
		Pumping panels
3353145111	<b>6414</b>	Disconnect switches, 600 volts or less
		A.c. full voltage manual controllers, 1,000 volts or less:
3353145113	<b>6415</b>	Designed and rated to U.S. National Standards (NEMA)
3353145116	<b>6417</b>	Designed and rated to International Standards (IEC)

**REFERENCE LIST — Continued**

FORM <b>MA335A</b>		
Product code	Item code	Item description
		<b>General purpose controls — Continued</b> <b>(Report quantity in number of units, except item code 6431)</b>  A.c. contactors, 1,000 volts or less <i>(excluding controls for packaged adjustable speed drives and synchronous motor control)</i> : 3353145119 <b>6419</b> Designed and rated to U.S. National Standards (NEMA) 3353145122 <b>6421</b> Designed and rated to International Standards (IEC)  3353145125 <b>6423</b> A.c. reduced voltage controls, 1,000 volts or less <i>(excluding synchronous motor starters)</i> 3353145128 <b>6425</b> Synchronous motor starters, 1,000 volts or less <i>(including both full and reduced voltages)</i> 3353145131 <b>6431</b> Motor control centers, 1,000 volts or less <i>(Report value only)</i> 3353145134 <b>6441</b> Starters and contactors for squirrel cage and wound rotor and synchronous and non-synchronous motors, over 1,000 volts, air break, vacuum and oil immersed 3353145137 <b>6445</b> Brakes and clutches 3353145141 <b>6447</b> Digital readout systems, including dial or plugboard type
		<b>Presence sensors and motion measurement devices (Report value only, except item codes 6488 through 6503)</b>  Limit switches (positioning sensors): 3353145143 <b>6451</b> Electromechanical positioning sensors 3353145146 <b>6454</b> Movement sensors Solid-state positioning sensors: 3353145149 <b>6456</b> Non-optical proximity sensors 3353145152 <b>6457</b> Optical proximity sensors 3353145155 <b>6464</b> All other pilot circuit devices (excluding relays and limit switches) 3353145158 <b>6467</b> D.c. power circuit devices (all voltages) 3353145161 <b>6468</b> Other control sensors (all voltages) Pushbuttons and pushbutton stations but excluding operators' desks and stations: 3353145164 <b>6482</b> Pushbuttons, 18mm and smaller 3353145167 <b>6484</b> Pushbuttons, 19mm to 29mm 3353145171 <b>6486</b> Pushbuttons, 30mm and larger 3353145173 <b>6487</b> Rheostats and resistors (except for electronic applications) sold separately, not elsewhere classified  Controls for adjustable speed drives <i>(Including electronic and nonelectric and operators' desks and stations)</i> : 3353145176 <b>6488</b> Controls for a.c. packaged drives <i>(Report quantity in number of units)</i> 3353145179 <b>6489</b> Controls for d.c. packaged drives <i>(Report quantity in number of units)</i> 3353145182 <b>6490</b> A.c. drives systems <i>(Report quantity in number of units)</i> 3353145185 <b>6492</b> D.c. drives systems <i>(Report quantity in number of units)</i> 3353145188 <b>6503</b> Solid state motor controllers (all voltages) <i>(Report quantity in number of units)</i>

# REFERENCE LIST — Continued

FORM **MA335A**

Product code	Item code	Item description
		<b>Presence sensors and motion measurement devices — Continued</b>
		<b>(Report value only, except item codes 6488 through 6503)</b>
3353145191	<b>6509</b>	All other general industry devices and systems <i>(Specify kind) (Check product reference list before reporting in this classification) (Report value only)</i>
XXX	<b>6599</b>	<b>Total general purpose industrial controls and power circuit devices (Sum of item codes 6402– 6509) (Report value only)</b>
		<b>Motor controller accessories and parts for industrial controls (Report value only)</b>
3353147101	<b>6703</b>	Motor controller accessories, including those items which are sold separately, but become part of a motor controller. Includes overload relays, auxiliary contacts, heater elements, mechanical interlocks, control transformers, kits to add push buttons, selector switches, pilot lights, separate controller enclosure fittings, reset mechanisms, etc. <i>(excluding motor circuit switches sold separately)</i>
3353147103	<b>6704</b>	Solenoids for industrial use (excluding solenoid-actuated regulating valves)
3353147104	<b>6705</b>	Parts for industrial controls
XXX	<b>6799</b>	<b>Total motor controller accessories and parts for industrial controls (Sum of item codes 6703–6705)</b>

2/4/03